

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Status of Claims:

Claims 2, 7, 12, 14, 16 and 18 are currently being cancelled.

Claims 1, 3-6, 13, 15 and 17 are currently being amended.

No claims are currently being added.

This amendment and reply amends and cancels claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claims remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending and canceling the claims as set forth above, claims 1, 3-6, 8-11, 13, 15 and 17 are now pending in this application.

Comments Concerning Information Disclosure Statements (IDSs):

On page 2 of the Office Action, it asserts that the IDS filed on November 5, 2003 has been considered, but that the IDS filed on May 25, 2004 (the Office Action incorrectly refers to the filing date as "November 24, 2004") was not considered. The basis for non-consideration of the May 25, 2004 IDS was that "there was no English translation for the disclosed literature." In reply, it is noted that reference A10 submitted with the IDS on November 5, 2003 was not considered by the Examiner, even though a Relevance statement was included in the IDS for that reference, and it is also noted that the relevance of the reference submitted with the IDS on May 25, 2004 was indicated as being "described in the present specification."

Accordingly, these two IDSs fully complied with the requirements set forth in Section 609 of the M.P.E.P., and thus the Examiner must consider all of the references submitted with those IDSs. See, for example, Section 609(A)(3), which states that "each information disclosure statement must further include a concise explanation of the relevance, as it is presently understood, . . . about the content of the information listed that is not in the English language. The concise explanation may be either separate from the specification or incorporated therein . . ." Thus, since reference A1 submitted with the IDS on May 25, 2004

was described in the present specification, it should have been examined by the Examiner. Also, since reference A1 submitted with the IDS on November 5, 2003 was described with a relevance statement in the IDS included with the PTO SB/08 form, it also should have been examined by the Examiner.

If for some reason the Examiner will not consider these references, he is respectfully requested to call the undersigned in order to discuss this matter in more detail.

Objection to the Abstract:

In the Office Action, the Abstract was objected to because of an ambiguous statement in the Abstract. By way of this Amendment and Reply, the Abstract has been amended to correct the supposedly ambiguous statement in the manner suggested in the Office Action.

Objection to the Drawings:

In the Office Action, the drawings were objected to because “an arithmetic section” as recited in the claims is not shown in the drawings. By way of this amendment and reply, the phrase “arithmetic section” has been changed to “processor”, which is shown in the drawings (see Figure 5, for example), whereby the drawings are believed to be unobjectionable.

Claim Rejections – 35 U.S.C. § 112, 2nd Paragraph:

In the Office Action, claims 1, 6 and 15 were rejected under 35 U.S.C. § 112, 2nd Paragraph, as being indefinite, for the reasons set forth on page 4 of the Office Action. By way of this amendment and reply, claims 1, 6 and 15 have been amended to overcome this indefiniteness rejection.

Claim Rejections - 35 U.S.C. § 103(a):

In the Office Action, claims 1-18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,134,667 to Suzuki in view of U.S. Patent No. 6,690,487 to Yamazaki. This rejection is traversed with respect to the presently pending claims under rejection, for at least the reasons given below.

According to a first embodiment of the present invention, a processor executes a macro-scoped correction process and a macro-discrimination process, thus reducing the circuit size for macro-scoped correction process, which needs a large reference region.

Furthermore, the macro-scoped correction process and the macro-discrimination process are executed after decreasing the resolution and the number of bits, as a result of which the hardware scale and the time for arithmetic operation can be reduced.

In addition, macro discrimination and discrimination based on a characteristic amount are performed in combination with each other, thereby obtaining a discrimination signal having a high resolution with a high precision.

With respect to presently pending independent claim 1, that claim has been amended to recite, among other things (whereby presently pending independent method claim 15 has been amended in a similar manner):

a conversion process section that executes a conversion process for decreasing a resolution and the number of bits of the first characteristic signal produced by the characteristic signal calculation section to convert the first characteristic signal into a second characteristic signal having a characteristic amount smaller than that of the first characteristic signal;

a storing section that stores the second characteristic signal that is obtained by conversion by the conversion process section;

a processor that reads out the second characteristic signal stored in the storing section, and executes an arithmetic operation for only a macro-scoped correction process with software or an arithmetic operation for both the macro-scoped correction process and a macro-discrimination process with the software;

wherein in the macro-scoped process, a pixel value is corrected by one of a smearing process in which pixel values of pixels interposed between two pixels which both have a value "1", and which are separated from each other by a distance of a predetermined value or less are changed to "1", and a majority process in which the number of pixels having pixel value "1", which are included in pixels close to a pixel of interest, is counted, and when the counted number is greater than a predetermined value, an output value is determined as "1", and when the counted number is smaller than the predetermined value, the output value is determined as "0", and

wherein in the macro-discrimination process, a connected region is extracted with respect to a white background region, a halftone region, a character region and a halftone-dot region, and the extracted connected region is determined as one of a background graphic, a halftone-dot background graphic, a halftone-dot photo and a continuous photo region.

Such features as highlighted above are not taught or suggested by Suzuki and Yamazaki, alone or in combination. Namely, Suzuki describes an area discrimination system for an image processing system, in which it is determined whether an image is a halftone image or a character image, and whereby edge emphasized signals are produced. Yamazaki describes an image processing method that performs LUT transformation on digital color signals, and whereby secondary matrix operations are performed on a color reproduction area as a whole, but whereby secondary matrix operations are not performed or LUT operations are performed on "gray" taken as a separate entity.

Still further, the specific features recited with respect to the macro-scoped process and the macro-discrimination process in claims 1 and 15 are not taught or suggested by either Suzuki or Yamazaki.

As is clear from the above, the image processing features described in both Suzuki and Yamazaki fall well short of the specific features recited in presently pending independent claims 1 and 15.

Conclusion:

Since all of the issues raised in the Office Action have been addressed in this Amendment and Reply, Applicants believe that the present application is now in condition for allowance, and an early indication of allowance is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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ABSTRACT OF THE DISCLOSURE

~~In an~~ An image region discrimination section in an image processing section, a characteristic signal calculation result obtained by hardware is subjected to macro-scoped correction and macro-discrimination by a processor. Further, in the image region discrimination section, a resolution and a signal bit number of a characteristic signals are decreased, the resultant characteristic signals is stored in a memory, and both a macro-discrimination result and the characteristic signals are synthesized to produce a final discrimination signal.